

Every Knock Is Not a Boost, but May Be Made So

Catching the Trouble in Time Will Add Mileage to Your Car's Service, Says an Automobile Expert

Series of Articles for Novice Car Owners

For the benefit of the new automobile owner The Tribune offers a series of articles on the construction and operation of motor cars, prepared by H. C. Brokaw, technical director of the West Side Y. M. C. A. automobile school. The sixteenth herewith tells how the "knock" may be made a boost.

Some one once said that every knock is a boost. It may be so on the car, if you will but understand that the knock is a warning of trouble; that it may mean immediate danger, or ultimate breaking down of the motor or car appliances, and that when you get at the car and find out what the knock is and remedy the trouble, you boost your chances of getting home safely, and perhaps boost the chances of having an engine in the car worth mentioning.

Now, there are some fifty-seven varieties of knocks; how shall you know which variety you have? Some of them have troubled the wise heads of the factories and the experts of the garage and service station. But with care you may locate and eliminate the ordinary causes.

Perhaps the most frequent knock is that which comes from carbon in the cylinders. Of course there ought not to be carbon there, but faulty carburetion, faulty lubrication and faulty compression do produce it. Many engines, even on the high grade cars, have a proneness to accumulate carbon, partly due to the poor grades of gasoline of the present day. Most high-power engines are constructed to have as high compression as possible, almost to the point of pre-ignition; then when a film of carbon forms in the combustion chamber it raises the compression

so that there is pre-ignition and a knock. Too Much Compression We once had a car with this trouble from the time we got it until the agent, after many trials, found a solution. This was to put a one-quarter-inch fiber gasket under the cylinder, raising it and lessening the compression. There were, of course, other adjustments to make, such as the water connection, valve push rods and things of that sort. But it did the trick; the carbon knock was stopped and instead of cleaning out carbon every 100 miles or so it ran 2,000 before it was needed. Later a friend had a car with the same trouble and found relief in the fiber gasket, which has the effect of increasing the size of the combustion chamber, thus lessening the compression.

One should not jump to the conclusion that every knock comes from carbon, however. Knocks which proceed from a loose connecting rod bearing, loose cylinder, lack of lubrication or a broken moving part might cause almost immediate damage to the motor, so it is well to determine what is at fault. Shut down the engine until you know one of these things is not making the noise. A piston slap, though noisy, or a clicking oil pump, however, is not going to break up the machine.

What Is a Gas Knock? When you go to the expert and he cannot immediately locate the cause of a knock he will call it a "gas knock" and say there is no remedy. Now, I do not know what a "gas knock" is. It is a term for the knock which is elusive, and some engine knocks come with the motor—the manufacturers have not thought it necessary to eliminate them, being harmless.

We put on a new cam shaft gear on a school car to eliminate a knock and had a worse one. It took a long time to find that in forcing on the gear the shaft had cracked the hub and rim, making the alignment of two teeth such that the knock was produced. The exhaust valves, due to gummed oil, make an elusive knock, because the stem does not spring back on the push rod properly and when the two meet there is a thump.

Set it down that lean mixture or over-advanced spark do not cause knocks, though that is a common statement. They do exaggerate and bring to our attention other faults, such as worn pistons of cylinders and other wears which become audible.

Is Your Trouble Here? Here is a list of things which have a tendency to produce knocks; discovery of the cause naturally suggests the cure: From mechanical looseness, due to

Improper adjustment or wear; loose crank pin bearing of connecting rod; crank pin bearing out of round; main crank shaft bearings loose; bearings too tight; wrist pin loose in piston or in connecting rod; wrist pin out of line with crank shaft, causing side slap; piston ring loose in slot or broken; cam follower guide worn; cam loose on shaft; flat spot worn in cam; flywheel loose where keyed to crank shaft; flywheel out of balance; worn and broken timing gear teeth; cylinder loose on base; timing gears loose on shaft; engine loose on frame; piston too small, causing slap; poor pushrod adjustment—map too large; sticking valves; spark plug too long, touching valves; magneto coupling loose; fan belt coupling striking pulley; fan blades striking somewhere; worn cylinder; bent crank shaft.

Faulty ignition—Spark advanced too far; spark too late, causing overheating; short circuits in ignition system causing irregular spark; spark plug defective and overheating; plug in poor location; wrong timing—too late, too early, worn order; dirty distributor, which diverts current.

Faulty carburetion—Pre-ignition, due to excess of carbon; rich mixture, causing overheating; lean mixture, causing worn parts to knock.

Faulty lubrication—Lack of oil; poor quality; excess, causing carbon deposits. Overheating of engine—Fan not working; pump parts revolving; radiator clogged; pipe lines clogged; rubber hose defective inside, blocking flow of water; ignition time too late.

Faulty compression—Engine deformed with too high compression, causing pre-ignition when throttle is wide open. There are other things, of course, which cause knocks, but the above are the common causes, and if the novice does not find his trouble in this list it is time to call the expert and let him worry about it. Stopping a knock boosts the efficiency of the car, so he has a chance to make every knock a boost.

Slow Movies Show Effect of Bumps on Tires

Slow motion pictures of the type that have amused movie fans by slowing down swiftly moving bodies to the point where every action may be analyzed have been utilized by a tire company for a scientific study of just what happens when a heavily loaded motor truck climbs a curb, drops off an elevation or bumps over a railroad track. The first time the pictures were taken by a tire company. Among the questions the pictures will aid in solving are the effects of heavy blows on highways, trucks, loads and tires.

Can Take Liened Car at Will

An important bill introduced in the New York State Legislature provides that if the proprietor of a garage or a repair shop is deprived of the possession of an automobile on which he has a lien his lien still continues, and he may without recourse to law seize the motor vehicle, no matter where found.

Golf for the Dealers

The Automobile Dealers' Association will hold its golf championship this year in the form of 72 holes of medal play instead of match play as last year. There will be two days of 36 holes each, one May 25 and the other June 1. The course has not yet been selected.

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Public Liability

Covers against loss from liability imposed by law upon the assured for damages or account of bodily injuries, including death resulting therefrom, accidentally suffered by any person or persons caused by the automobile owned or operated by the assured. The usual standard amount carried for such protection is limited from \$5,000 to \$10,000. The limitation of one person's injury is \$5,000 and of more than one is \$10,000. This form of coverage does not include accidents to employee or employees of the assured engaged in the use, operation or maintenance of the automobile. A greater amount of insurance can be carried for a very little cost on this form.

Property Damage Coverage

Automobile property damage coverage provides indemnity for the assured against loss by reason of his legal liability for injury to or destruction of any property (excluding, however, the property of the assured or in charge of the assured or any of his employees or carried in or upon the automobile of the assured) on account of an accident due to the ownership, maintenance or use of any insured automobile. The company's liability with respect to claims arising from one accident is usually limited to \$1,000 and for a slight increase in premium a higher amount of protection can be had.

Loss of Use

Provides indemnity for resultant loss of use where claim is made for the time during which the claimant's automobile is laid up for repairs due to an accident which occurred with the assured's car. The limitation of coverage is usually \$1,000 and this form is frequently included in the property damage coverage.

Auto Insurance Rates Have Joined H. C. of L. Brigade

Particularly in Collision Classification Premiums Have Advanced as Much as Forty-two Per Cent

Along with everything else nowadays the cost of automobile insurance has gone up. The changes in rates announced after a conference of the National Automobile Underwriters and the National Workmen's Compensation Bureau put the premiums in some cases higher than 42 per cent above the rates prevailing prior to the announcement. This increase is particularly great in the case of collision insurance.

Cars are now divided into four groups: Low priced, medium low priced, medium high priced and high priced. The metropolitan district is divided into five territories, the first including Manhattan, Brooklyn, the Bronx and Queens, except Far Rockaway and the Rockaway peninsula. The rates are higher in this territory than in any other in the metropolitan district, no doubt on account of the greater amount of traffic. In fact, the rates are anywhere from two to three times as high as in outlying territory.

The increased rates affect particularly public liability, property damage and collision. The new rates were made effective April 15 for new business, and will go into effect June 1 for renewals. The general increase on property damage is about 10 per cent. Rates on fire and theft vary according to the age of the car and the list price, and in a few instances have operated to decrease the cost. The charge of one tire due to puncture, cut, gash, blowout or other tire trouble and excluding in any event loss or damage to any tire unless caused in an accident, collision, which also causes other loss or damage to the insured automobile. The limitation of coverage is to the extent of the insurance value of the car as stipulated in the policy.

Collision—Loss of Use

Provides indemnity to the assured for the time during which the insured automobile is laid up for repairs, due to an accident covered by the collision policy. This form of insurance is new protection and one which the companies have had no experience with. Not all companies will write this form of protection.

L. H. GOLDBERG.

Just How Much Speed Do You Need in a Car?

Steady Driving Gets More Distance Than Spurring at Times in a Day's Run The automobile owner talks a lot about speed and hears a lot about speed, but after all just how much speed is necessary or desirable in a car? Unless it is a properly balanced machine, a speed as high as forty miles an hour is discomforting to those who are riding. Of course, there are some automobiles, either very large and long or else well balanced, in which one may ride an express train speed in express train comfort.

Normally, however, very high speeds are not alone disturbing, but dangerous, and, although many a man likes to brag about how fast his car can go, except in an emergency, he doesn't go anywhere near the limit of its capabilities. The chances are that most of us in driving rarely do better than thirty miles an hour, except for brief flashes or when trying to show off, or else in passing some other automobile.

Auto Dealers' Committee To Help Relief Fund

The automobile industry has formed a committee, headed by W. C. Portner, president of the Automobile Dealers' Association, to raise part of the greater New York fund to be administered by the joint distribution committee for relief of sufferers from famine, disease and destitution in the war ridden countries. Among the members are Walter A. Woods, S. S. Toback, A. G. Kaufmann, Joseph Stern, Albert Hirst and Harry T. Gardner, secretary of the dealers' association.

'Ware the Sunday Driver!

There are a good many Sunday drivers who are like the old Sunday rider of horses. These latter got out only one day a week and didn't know how to control their mounts very well. The same is true about a lot of motor car operators, and each Sunday a lot of smash-ups either in the country or in the city. Traffic is becoming so heavy that premium is put on skillful operation of cars and on a sufficient amount of watchfulness to dodge the other fellow.

Insurance Information Service to Motorists

Automobile insurance is generally one of the least understood things about a car. A great many owners and operators know far more about the internal mechanism of their machines than they do about this intensely important external feature of automobilism. The Tribune is anxious to be of assistance to motorists who have insurance problems of any description, and for that reason invites any automobilist who wishes information on any phase of automobile insurance to address an inquiry to the Automobile Editor. The inquiries will be answered promptly and competently. General articles on the subject of automobile insurance will appear from time to time in these columns.

age coverage for a slight increase of premium. This insurance protection is essential for chauffeurs who operate their own cars for hire and very often temporarily engage other cars while their automobiles are in the repair shop; and claim is made for the cost of hiring another machine in order to maintain their livelihood.

Collision Coverage

This form of insurance covers against the actual loss or damage to the automobile insured if such damage is caused solely by accidental collision with another object, subject to the following exclusions: While the automobile is being operated in a race or speed contest, or driven by any person under the age limit fixed by law. It further excludes the damage of any tire due to puncture, cut, gash, blowout or other tire trouble and excluding in any event loss or damage to any tire unless caused in an accident, collision, which also causes other loss or damage to the insured automobile. The limitation of coverage is to the extent of the insurance value of the car as stipulated in the policy.

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Ship-by-Truck Week May 17 to 22, a National Activity

Campaign for Good Roads To Be Worked in Conjunction With Better Haulage of Produce

The operation of a system of truck routes throughout the country, would result in a substantial decrease in the high cost of living, particularly in foodstuffs.

The incorporation of this thought in the platform of the Ship by Truck-Good Roads campaign, which will be nationally celebrated during the week of May 17 to 22, signifies the intention of the committee in charge to wage a war on the prices of foodstuffs, the success of which depends entirely on the passing of a national highways bill and the resultant organization of motor truck systems.

Investigation of market and shipping conditions, as relating to produce, discloses the many possibilities and benefits to be derived by the general public as well as the farmer and commission merchant, from the ship by truck policy. The farmer will no longer be compelled to leave his farming, as the trucking company will call daily or weekly and convey his produce direct to market or to the freight station.

This saving of the farmer's time and

the use of his team of horses for farm work and the economy of one direct haul of a longer distance than 150 miles is not advocated. With the direct haul policy in operation, quantities of perishable foodstuffs which formerly rotted in freight cars will be saved and better food at lower prices will prevail.

A motion picture, "Ship by Truck" will be exhibited throughout the country in conjunction with the campaign. Scenes therein visualize the farmer on his way to market, his horses plodding along the country road, and the newer method of fast motor truck shipping, which permits of the farmer attending to farm duties; the freight car loaded with perishable foodstuffs relegated to a sidetrack for an indefinite period, and the congested freight yards of a metropolis, with line after line of freight cars awaiting unloading and subject to labor shortages and conditions.

The interest and cooperation of the general public, in addition to that of the farmer, the truckman and the commission merchant are solicited by the committee in charge in their mutual effort to put the campaign over to their mutual advantage.

Stethoscoping the Engine's "Breathing"

Listening Devices That Will Tell You How the Health of the Motor Car Really Is

"It is not a very difficult matter to construct an instrument that will enable the owner to listen to the very heart beats of his motor and find out what ails it," writes an automobile expert in "American Motorist."

"One way is to get a stethoscope such as is used by physicians in listening to the beating of the patient's heart and the working of his breathing apparatus. This may be made suitable to the purpose by lengthening the stethoscope tube. The other end of the device may then be held against any part of the motor without the necessity of moving the receivers from the ears. "Another scheme is to secure from the junk man or local telephone company a telephone receiver body, in the closed end of which is screwed a steel rod 3-16 inch in diameter and about 15 inches long. The rod should be threaded for about one and one-half inches from one end and a nut and lock washer should be used on each side of the receiver so as to hold the steel rod securely in place. "When the rod is held against the engine and the receiver to the ear all sounds in the motor are 'stethoscoped' up the rod."

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